

ARMS CONTROL PROVISIONS IN THE OUTER SPACE TREATY: A SCRUTINIZING REAPPRAISAL

*Stephen Gorove**

INTRODUCTION

The provisions of the Outer Space Treaty¹ relating to the military uses of outer space, including the moon and other celestial bodies, constitute a significant landmark in man's efforts to control the use of atomic weapons and other weapons of mass destruction and to prevent military confrontations on celestial bodies.² The relevant control provisions are found in article IV of the Treaty and read as follows:

*Chairman of the Graduate Program of the School of Law and Professor of Law, University of Mississippi School of Law; author of *LAW AND POLITICS OF THE DANUBE: AN INTER-DISCIPLINARY STUDY* (1964).

¹Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, [1967] 3 U.S.T. 2410, T.I.A.S. No. 6347 [hereinafter cited as Outer Space Treaty].

²Comparatively few articles have appeared in print dealing specifically with article IV of the Outer Space Treaty. See Gorove, *Some Thoughts on Article IV of the Outer Space Treaty*, in *PROCEEDINGS ON THE THIRTEENTH COLLOQUIUM ON THE LAW OF OUTER SPACE* 79 (1971); Markoff, *Sur l'interprétation juridique de l'article IV du Traité régissant les activités spatiales des états*, 31 *REVUE GÉNÉRALE DE L'AIR ET DE L'ESPACE* 30 (1968); Verplaetse, *Autour de l'article IV du Traité de droit cosmique du 27 Janvier 1967*, 31 *REVUE GÉNÉRALE DE L'AIR ET DE L'ESPACE* 45 (1968); Comment, *The Treaty on Outer Space: An Evaluation of the Arms Control Provisions*, 7 *COLUM. J. TRANSNAT'L L.* 259 (1968).

There is, however, a wealth of literature dealing with various aspects of the legal implications of the military uses of outer space. See Brennan, *Arms and Arms Control in Outer Space*, in *OUTER SPACE: PROSPECTS FOR MAN AND SOCIETY* 123 (L. Bloomfield ed. 1962); Cooper, *Self Defense in Outer Space and the United Nations*, 11 *ZEITSCHRIFT FÜR LUFTRECHT AND WELTRAUMRECHTSFRAGEN* 186 (1962); Gotlieb, *Nuclear Weapons in Outer Space*, 3 *CAN. Y.B. INT'L L.* 3 (1965); Kopal, *The Problem of Neutralization and Demilitarization of Outer Space*, in *PROCEEDINGS OF THE FOURTH COLLOQUIUM ON THE LAW OF OUTER SPACE* 336 (1961); Korovin, *On the Neutralization and Demilitarization of Outer Space*, *INT'L AFF. (Moscow)* 82 (Dec. 1959); Markoff, *Sur le sens juridique de l'expression "utilisation pacifique de l'espace extra-atmosphérique"*, 25 *REVUE GÉNÉRALE DE L'AIR ET DE L'ESPACE* 227 (1962); Markov, *Against the So-Called "Broader" Interpretation of the Term "Peaceful" in International Space Law*, in *PROCEEDINGS OF THE ELEVENTH COLLOQUIUM ON THE LAW OF OUTER SPACE* 73 (1969); Meyer, *Interpretation of the Term "Peaceful" in the Light of the Space Treaty*, in *PROCEEDINGS OF THE ELEVENTH COLLOQUIUM ON THE LAW OF OUTER SPACE* 24 (1969); Poulantzas, *The Outer Space Treaty of January 27, 1967, A Decisive Step Towards Arms Control, Demilitarization of Outer Space and International Supervision*, 20 *REVUE HÉLLÉNIQUE DE DROIT INTERNATIONAL* 66 (1967); Schelling, *The Military Use of Outer Space: Bombardment Satellites*, in *OUTER SPACE AND WORLD POLITICS* 97 (J. Goldsen ed. 1963); Vlasic, *The Growth of Space Law 1957-65: Achievements and Issues*, [1965] *Y.B. AIR AND SPACE L.* 365, 401-05 (R. Mankiewicz ed. 1967); Woetzel, *Legal Aspects of Military Uses of Space in Soviet and American Eyes*, in *SPACE AND SOCIETY* 121 (H. Taubenfeld ed. 1964); Zhukov, *On the question of the Interpretation of the Term "Peaceful Uses of Outer Space."* in *PROCEEDINGS OF THE ELEVENTH COLLOQUIUM ON THE LAW OF OUTER SPACE* 36 (1969).

States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall also not be prohibited.³

The object of this presentation is to analyze and interpret these provisions, which may conveniently be broken down into two categories: (1) those provisions dealing with nuclear and other weapons of mass destruction and (2) those dealing with the peaceful uses of the moon and other celestial bodies.

NUCLEAR AND OTHER WEAPONS OF MASS DESTRUCTION

Paragraph one of article IV of the Treaty relates to nuclear weapons and any other kinds of weapons of mass destruction.⁴ The initial problem presented by the Treaty is the lack of a definition of what constitutes a "nuclear weapon" or a "weapon of mass destruction." It may be presumed that all arms which utilize atomic energy in accomplishing their intended purpose, irrespective of their size or destructive force, would be regarded as nuclear weapons. At the same time, it also may be assumed that conventional weapons do not come under the category of either nuclear weapons or any other weapons of mass destruction. While there is no indication in the Treaty as to how many people must

Further background materials and generalized discussions may also be found in textbooks on space law: C. CHRISTOL, *THE INTERNATIONAL LAW OF OUTER SPACE*, (Naval War College, International Law Studies 1962, No. 55, 1966); H. LAY & H. TAUBENFELD, *THE LAW RELATING TO ACTIVITIES OF MAN IN SPACE* (1970); L. LIPSON AND N. KATZENBACH, *REPORT TO THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ON THE LAW OF OUTER SPACE* (1961); N. MATTE, *AEROSPACE LAW* (1969). M. MCDUGAL, H. LASSWELL & I. VLASIC, *LAW AND PUBLIC ORDER IN SPACE* (1963); M. VASQUEZ, *COSMIC INTERNATIONAL LAW* (1965).

³Outer Space Treaty, *supra* note 1, at art. IV, para. 23.

⁴This stipulation is an outgrowth of the so-called "no bombs in orbit" resolution of the United Nations General Assembly which called upon all states "to refrain from placing in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, installing such weapons on celestial bodies, or stationing such weapons in outer space in any other manner." Question of General and Complete Disarmament, G.A. Res. 1884, 18 U.N. GAOR Supp. 15 at 13 U.N. Doc. A/5515 (1964).

be affected to constitute a weapon of mass destruction, a group of 20 to 30 people or less probably would not constitute such a mass. If on the other hand, bacteriological and chemical weapons were used, even against a small group, then these weapons would seem to fall under the category of weapons of mass destruction.⁵

The primary obligation in paragraph one concerning "nuclear weapons and any other kinds of weapons of mass destruction" is that the states parties to the Treaty undertake not to place in orbit around the earth any objects carrying such weapons.⁶ The phrase "orbit around the earth" clearly implies that a full orbit rather than a fractional orbit or suborbital flight is intended.⁷ Thus, the provision is not meant to outlaw the use of ICBM's with nuclear warheads. At the same time, an orbiting missile killer or laser would be prohibited, regardless of whether or not it was intended for defensive or offensive purposes.

Second, the states parties to the Treaty undertake not to *install* nuclear and other weapons of mass destruction on celestial bodies or *station* them in outer space in any other manner.⁸ The drafters omitted any reference to the moon in this provision even though in other parts of the Treaty they have fairly consistently referred to the "moon and other celestial bodies." It is by no means clear, however, whether the omission of the word "moon" was intentional, or if the implication is correct that no restriction is placed on the installation of atomic weapons on the moon. One may surmise, however, from the frequently used phrase "moon and other celestial bodies" that the moon is to be regarded as a celestial body under the Treaty. Moreover, it would make little sense to permit installation of weapons of mass destruction on the moon while prohibiting such installation on other celestial bodies, when man's use of the latter looms in the more distant future.

Significant questions with respect to the interpretation of paragraph one of article IV relate to the meaning of the words "install" and "station." At what point does a weapon become installed? Is the mere presence of a weapon on a celestial body prohibited? Furthermore, what constitutes stationing in outer space? Is this identical with orbiting, or

⁵See Statements by U.N. Ambassador Arthur J. Goldberg and Deputy Secretary of Defense Cyrus R. Vance made prior to Senate ratification of the Treaty, in *Hearings on the Treaty on Outer Space Before the Senate Foreign Rel. Comm.*, 90th Cong., 1st Sess., at 23, 76, 100 (1967) [hereinafter cited as *Hearings*].

⁶Outer Space Treaty, *supra* note 1, at art. IV, para. 1.

⁷This interpretation implies that the object must have been placed into full orbit around the earth rather than into a fractional orbit but it leaves open the question whether or not the object must have actually completed at least one full orbit before it could come under the Treaty's prohibition.

⁸Outer Space Treaty, *supra* note 1, at art. IV, para. 1.

does it have a distinct meaning? Any definition of installation of a weapon should require something more than the mere presence of a weapon on a celestial body. On the other hand, station should be interpreted to include the placing of a weapon in a relatively fixed orbit in relation to the underlying celestial body, such that the speed of the orbiting object would coincide with the speed of rotation of the celestial body.⁹

The prohibition against nuclear weapons and other weapons of mass destruction, strictly speaking, relates only to "objects" which carry such weapons but not to the weapons themselves.¹⁰ The probable reason for this stipulation is that at present, nuclear weapons can not be placed in orbit without being transported by another object. Paragraph one of article IV uses the word "undertake" to describe the parties' agreement about such objects instead of the more commonly used and rigorous term "shall." This distinction arises because the language in article IV—unlike that of article I—is not reflective of a general obligation binding upon all states. Rather, article IV enumerates specific duties imposed only upon the states parties to the Treaty.

Paragraph one of article IV appears to deal only with weapons that would orbit around the earth, their installation on celestial bodies or their stationing in outer space. There is, however, no specific restriction on the orbiting of weapons around celestial bodies, apart from stationary orbiting.¹¹ The reason for this omission is not entirely clear. Possibly, such orbiting for some time to come will not have any practical military significance.

USE FOR "PEACEFUL" PURPOSES

The second paragraph of article IV states that the moon and other celestial bodies shall be used by the parties exclusively for peaceful purposes. Like paragraph one, this provision obligates only the states parties to the Treaty and is not declaratory of a more general obligation. It should also be noted that this provision makes no reference to outer space. This is not an accidental omission. Both paragraphs one and two

⁹Some writers give a very liberal interpretation to the word "station." According to Poulantzas, for instance, the phrase "or station such weapons in outer space in any other manner" includes every manner in which nuclear weapons or weapons of mass destruction could be placed in outer space or on celestial bodies. Poulantzas, *supra* note 2, at 67-68. While the Treaty negotiations give little, if any, indication regarding the relevant intention of the drafters, it appears likely that station, much like installation, was meant to convey more than just sheer presence in outer space—possibly presence coupled with some sense of permanence.

¹⁰Outer Space Treaty, *supra* note 1, at art. IV, para. 1.

¹¹*But see* note 9 *supra*.

of article IV express the underlying policy of prohibiting only certain uses of atomic and other weapons of mass destruction in outer space, yet not completely outlawing their use.¹²

Paragraph two refers to the "moon and other celestial bodies," raising the question of the precise meaning of these terms, particularly whether or not the term "moon" should include not only the physical mass of the moon, but also its gravitational area.¹³ The same question could also be raised with respect to other celestial bodies which may be in solid, fluid or gaseous states.

Another interesting problem that may have some practical relevance to the future application of paragraph two relates to the size of celestial bodies. How large must a celestial body be to be considered such a body? Would a meteorite or asteroid or a small moon of a celestial body constitute such a body under the terms of the Treaty? An example of the potential problems was indicated when not long ago scientists reported that it might become technically feasible for a future space expedition to steal one of the smaller size moons (5-10 miles in diameter) of Mars, to remove it from its Martian orbit and to place it in orbit around the earth, and thus effectively change the solar system.¹⁴ Would the removal of a celestial body from its natural position by human intervention change its characterization as a celestial body under the Treaty? A meteorite which lands on earth by natural forces and without human interference presumably loses its designation as a celestial body under the Treaty.¹⁵ But the same is probably not true with respect to the example of the Martian moon.

¹²Both the preparatory work and the negotiations leading up to the Treaty clearly indicate that the drafters did not intend to go beyond the textual stipulation and impose on outer space the requirement that it must be used exclusively for peaceful purposes. See generally *Hearings, supra* note 4; STAFF OF SENATE COMM. ON AERONAUTICAL AND SPACE SCIENCES, 90TH CONG., 1ST SESS., REPORT ON TREATY ON PRINCIPLES GOVERNING THE ACTIVITIES OF STATES IN THE EXPLORATION AND USE OF OUTER SPACE, INCLUDING THE MOON AND OTHER CELESTIAL BODIES (Comm. Print 1967) [hereinafter cited as STAFF REPORT]. See also Subcomm. on the Peaceful Uses of Outer Space, 21 U.N. GAOR, Annexes, vol. II, U.N. Doc. A/AC 105/35 (1966); Comm. on the Peaceful Uses of Outer Space, Report, 21 U.N. GAOR, Annexes vol. II, U.N. Doc. A/6431 (1966).

¹³Similar problems arise in connection with determining the demarcation line between the earth and outer space. Cf. Gorove, *The Recovery and Return of Objects Launched into Outer Space: A Legal Analysis and Interpretation*, 4 INT'L LAWYER 682, 684 (1970).

¹⁴According to the report, one of the Martian moons, Deimos, which has a diameter of about 5 miles, is located more than 12,500 miles above the surface of Mars, whereas the other moon, Phobos, which is about twice the size of Deimos, is only about 4,000 miles from the planet. Memphis Commercial Appeal, Jan. 27, 1970, at 5, cols. 3-4.

¹⁵Cf. Gorove, *Interpreting Article II of the Outer Space Treaty*, 37 FORDHAM L. REV. 349, 351 (1969).

Paragraph two contains one of the most controversial provisions in the Outer Space Treaty. The meaning of "peaceful" has given rise to at least two major interpretations. Under one interpretation the word "peaceful" means nonmilitary,¹⁶ while under a second interpretation the term means nonaggressive.¹⁷

There is a vast difference insofar as the outcome of these two different interpretations is concerned. Under the former interpretation no military activities could be conducted on the moon and other celestial bodies except those which are specifically permissible under the paragraph two language, *e.g.*, the use of military personnel for scientific research. Under the latter interpretation, activities nonaggressive in nature would be permissible, even if they are conducted by the military, with certain exceptions. These exceptions are those specifically forbidden by article IV, *e.g.*, the establishment of military bases, installations and fortifications, the testing of any types of weapons and the conduct of military maneuvers on celestial bodies. Those advocating this second position have referred to the Charter of the United Nations for their meaning of peaceful.¹⁸ The former position is supported by the Statute of the International Atomic Energy Agency which distinguishes peaceful from military uses of atomic energy.¹⁹

In reality it would appear that the drafters of the Outer Space Treaty have not adopted either of the above interpretations. Two facts support a meaning of peaceful that is distinct from earlier usages. First, certain

¹⁶This interpretation has been championed mostly, though not exclusively, by the Soviet Union and Soviet writers. See STAFF REPORT, *supra* note 10, at 11; Zhukov, *supra* note 2, at 36. For a list of additional writers, see Markov, *The Juridical Meaning of the Term "Peaceful" in the 1967 Space Treaty*, in PROCEEDINGS OF THE ELEVENTH COLLOQUIUM ON THE LAW OF OUTER SPACE 30, 34 (1969).

¹⁷This has been the position of the United States and many Western writers. See, *e.g.*, L. LIPSON & N. KATZENBACH, *supra* note 2, at 25; Meyer, *supra* note 2, at 26. It should be noted, however, that as Markov points out, it would be incorrect to characterize the literature in the oversimplified terms of a "Russian" or an "American" doctrine in relation to the interpretation of the term "peaceful." Markov, *supra* note 15, at 34. For a keen analysis of the early literature on the problem, see M. MCDUGAL, H. LASSWELL & I. VLASIC, *supra* note 2, at 395.

¹⁸The U.N. Charter does not prohibit military activities in general but outlaws threats to the peace, breaches of the peace, and acts of aggression. See U.N. CHARTER arts. 2, (paras. 2 & 4), 39-51.

¹⁹Statute of the International Atomic Energy Agency, art. 2, Oct. 26, 1956, [1957] U.S.T. 1093, T.I.A.S. No. 3873, 276 U.N.T.S. 3 which reads:

The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any *military* purpose. (emphasis added)

For a comprehensive discussion of the meaning of peaceful versus military uses in relation to nuclear energy, see Gorove, *Distinguishing "Peaceful" from "Military" Uses of Atomic Energy: Some Facts and Considerations*, 30 OHIO ST.L.J. 495 (1969).

activities, such as scientific research or the use of any equipment and facility necessary for peaceful exploration are not prohibited, even if undertaken by the military. Second, certain other activities, such as the establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military maneuvers, are forbidden even if these activities are of a nonaggressive nature.²⁰

It would seem that the drafters of the Treaty have made a serious, and at least a partially successful, attempt to get away from the somewhat artificial and practically unworkable distinction between peaceful purposes on the one hand, and military or aggressive purposes on the other hand. The trouble with these traditional distinctions has been that a particular endeavor such as aerial photography may be used for both purposes, *i.e.*, furnishing cloud cover information for meteorological purposes as well as for military reconnaissance. In the case of aerial photography there is no present international machinery by which the ultimate use of an aerial photograph can be determined. Since it is unlikely that such a machinery will be agreed upon in the near future, it would appear much more productive to abandon the artificial and essentially relative distinction between peaceful and military purposes or peaceful and aggressive purposes, and focus instead on the prohibition or permission of the particular activity involved.

One possible standard is the relation of an activity to national security. Certain activities may not be as critical or significant as others. Therefore, it would be better to identify those activities which constitute minimal threats to national security and permit those regardless of the ultimate purpose for such activities or their conduct by military personnel. In this manner the whole bothersome issue of peaceful versus military or aggressive could be avoided for the most part, although questions of interpretation would still remain. For example, nation states may decide to permit photography of their underlying territories from outer space regardless of the ultimate purpose for the photographs. If this were to be done, the type of problem which might arise would relate only to the interpretation of the word "photography," which would appear to be much more easily identifiable than any ultimate use or hidden purpose.²¹

Admittedly, there might be many other phrases less easily interpreted than the word "photography." For instance, what is the meaning of a military base, installation or fortification? What constitutes a base? How large does it have to be to become a base? When does a base

²⁰Outer Space Treaty, *supra* note 1, at art. IV, para. 2.

²¹Gorove, *supra* note 2, at 126.

become a military base? Is a base built by civilians a military base or a civilian base? Are all bases built by the military necessarily military bases? What if they are jointly built both by military and civilian personnel? Does the actual use of a base make any difference, or does the ultimate purpose for which it has been built have a controlling voice in the determination? Just when does a military base become established? Does it have to be completed and fully operational to become established or would the partial establishment also be forbidden? The same questions could also be raised with respect to an installation or fortification. Furthermore, are military bases, installations and fortifications inclusive or exclusive terms? Are fortifications and bases smaller or larger than installations?

In response to these questions, one may observe that a military base normally refers to a center of military activities or a source of military supplies, whereas a fortification refers to a series of structures, walls or furnishings, which are used to strengthen a position against enemy attack. An installation may refer to any apparatus which is in position for use.²² It also would appear that any kind of establishment, whether partial or complete, would fall under the prohibition, just as the testing of weapons would cover any and all segments of the testing procedure.

Under a strict interpretation of paragraph two any use of weapons on celestial bodies which does not involve testing is allowed under article IV as long as the use is for peaceful purposes. In fact, if such strict interpretation is carried to its logical conclusion, the same observation would be applicable to atomic weapons as long as they are not in orbit around the earth, installed on celestial bodies or stationed in outer space.

Article IV's prohibition against the establishment of bases, installations and fortifications is applicable only to "celestial bodies." While there is no reference here to the moon, as was previously discussed, it would appear that the moon is considered a celestial body.²³

It may also be of interest to point out that the use of any equipment or facility is permissible under paragraph two so long as such use is necessary for the peaceful exploration of the moon and other celestial

²²The original United States draft spoke only of "military bases and fortifications" whereas the Soviet draft used the phrase "military bases and installations." The final language incorporated in Part. IV, para. 2 of the Treaty, referring to "military bases, installations and fortifications," is a compromise between the initial U.S. and Soviet positions. For text of the drafts and letters of transmittal see Comm. on the Peaceful Uses of Outer Space, Report, 21 U.N. GAOR, Annexes, vol. II, U.N. Doc. A/6431 (1966).

²³For a similar argument regarding omission of the word "moon" in prohibiting the installation of weapons on celestial bodies, see p. 116 *supra*.

bodies.²⁴ Therefore, it would appear that military equipment or facilities could legitimately be used for such purpose. However, as pointed out, it may be argued that the word peaceful was not meant to imply nonmilitary.

A similar argument may be predicated on the language in paragraph two that allows the use of military personnel for scientific research or for any other peaceful purposes.²⁵ Thus, scientific research is regarded by the drafters as an activity basically of a peaceful character. This is the connotation that may reasonably be drawn from the use of the phrase "for scientific research or for any other peaceful purposes."²⁶ It may then be safe to assume that no scientific research is prohibited by the Treaty regardless of whether or not it is conducted by civilian or military personnel. There may be strong doubts about this assumption, but the express language does not place any restriction on the objective of the research. Thus, the object of the research, whether the advancement of science, military defense, or perhaps even outright aggression, would have no bearing on the lawfulness of any research activity under paragraph two. Admittedly, this construction may run contrary to the general spirit and other provisions of the Treaty, *i.e.*, that the exploration and use of outer space be carried out for the benefit and in the interests of all countries, and that the moon and other celestial bodies be used exclusively for peaceful purposes. However, the wording of the provision pertaining to the free use of military personnel for scientific research makes no mention of the moon or other celestial bodies or, for that matter, of outer space. Thus, one may assume that it was meant to apply generally. The drafters of the Treaty have indicated that scientific research should not be curtailed and realistically they have allowed the use of military personnel to further such research. It is reasonable to conclude that regardless of its objective or where it takes place, scientific research is favored by the Treaty terms.²⁷

ASSESSMENT

The arms control provisions of the Outer Space Treaty are broad

²⁴Outer Space Treaty, *supra* note 1, at art. IV, para. 2. The United States, over Soviet opposition, successfully argued that the use of military equipment on the moon and other celestial bodies was essential because equipment for this type operation had, in many cases, been developed through military research. *Cf.* Dembling & Arons, *The Evolution of the Outer Space Treaty*, 33 J. AIR. L. & COM. 419, 432-33 (1967).

²⁵Outer Space Treaty, *supra* note 1, at art. IV, para. 2.

²⁶*Id.*

²⁷Also, scientific research, regardless of its ultimate purpose, is not in and of itself outlawed under the U.N. Charter.

indicators of man's concern with the prevention of the extension of the arms race into his newly unfolding spacial environment. The language in paragraph one of article IV should be hailed as a significant step in this general direction.

At the same time, it is perhaps not surprising to find that the Treaty provisions concerning arms control also reflect some of the general fears, suspicions, antagonisms and rivalries prevailing in world politics. Certainly, the weapons limitation provisions of paragraph one, and perhaps to a lesser extent the provisions in paragraph two concerning the use of the moon and other celestial bodies for peaceful purposes, seem to indicate a general hesitancy on the part of the atomic power parties to curtail entirely the use of nuclear weapons in outer space, even on distant celestial bodies. The language chosen also reflects many problems of meaning and interpretation which are not necessarily peculiar to this treaty.

The Treaty has not solved the problem of the meaning and interpretation to be given to the term "peaceful." In determining the future uses of the moon and other celestial bodies, the present analysis suggests that if we desire to introduce some measure of certainty it would be better to abandon such a general and undefined phrase and instead identify permissible or prohibited activities. The relevant Treaty provisions,²⁸ are indicative of a partial attempt to move in this direction. However, it seems somewhat unfortunate that they do not provide for further identification of specific problem areas so as to avoid endless arguments as to whether the word "peaceful" means nonmilitary or nonaggressive or perhaps something else. Even though questions of interpretation would still remain concerning the scope of prohibited activities, these could be resolved by a definition of important terms in a future outer space convention. Such a convention would be desirable particularly in the wake of The Agreement on the Rescue and Return of Astronauts and the Return of Space Objects²⁹ and other agreements complementing and spelling out in detail the rights and obligations incorporated in the Outer Space Treaty. It could also resolve some of the serious inconsistencies and queries suggested by this article.

²⁸The relevant provisions of the Treaty are patterned after the Antarctic Treaty terms. See The Antarctic Treaty, Dec. 1, 1959, [1961] 1 U.S.T. 794, T.I.A.S. No. 4780, 402 U.N.T.S. 71.

²⁹Apr. 22, 1968, [1968] 6 U.S.T. 7570, T.I.A.S. No. 6599. For thorough analyses of the Agreement's provisions see Gorove, *Legal Problems of the Rescue and Return of Astronauts*, 3 INT'L LAWYER 898 (1969); Gorove, *supra* note 12.